

## **Impact of enrichment planting activity on soil physico-chemical properties of degraded forestland**

### **ABSTRACT**

Forest replanting activities were considered the best way to restore the degraded forestland to its initial state. Enrichment planting, a mix species planting technique is believed to be able to restore the degraded forest soil fertility. However, the study on the impact of enrichment planting on degraded forestland still lacking. Hence, a study was carried out at the enrichment planting and secondary forest plots of Compartment 13, Tapah Hill Forest Reserve, Perak, Malaysia, to evaluate on soil physico-chemical properties and soil quality index (SQI) for both plots. Results showed that enrichment planting sites had significantly higher ( $p < 0.05$ ) clay fraction, bulk density, porosity, acidity, total carbon, total nitrogen, organic matter and exchangeable magnesium compared to those of secondary forest at 0-15 cm depth. However, exchangeable potassium was lower ( $p < 0.05$ ) and exchangeable aluminium was higher ( $p < 0.05$ ) for enrichment planting at 15-30 cm depths. Moisture content, organic matter and exchangeable magnesium show the strongest contributing factors to soil fertility for both plots. Soil Quality Index (SQI) for enrichment planting was higher compared to that of the secondary forest for soils at 0-15 cm depth, while the SQI for both plots at 15-30 cm depth was identical. Rehabilitation activity such as enrichment planting after 42 years of planting improves soil fertility by which the soil properties at particular degraded area can be nurtured back to its original state through appropriate rehabilitation efforts.

**Keyword:** Degraded forest; Rehabilitation; Secondary forest; Enrichment planting; Soil quality index